



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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GOVERNOR

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**North Carolina Board of Transportation
Environmental Planning and Policy Committee
Meeting Minutes for August 7, 2002**

A meeting of the Environmental Planning and Policy Committee (EPPC) was held on August 7, 2002 at 8:00 AM in the Board Room (Room 150) of the Transportation Building. Nina Szlosberg chaired the meeting. Other Board of Transportation members that attended were:

Conrad Burrell
Marion Cowell
Nancy Dunn

Frank Johnson
Cam McRae
Lanny Wilson
Nina Szlosberg

Ms. Szlosberg called the meeting to order. After opening remarks, Ms. Szlosberg accepted a motion to approve the minutes as presented from the July 10, 2002 EPPC meeting. The motion was approved.

Ms. Szlosberg introduced David Hyder, Office of the Human Environment, NCDOT, for an update on the ways the Fuels Committee is going to promote clean air and work on the Governor's agenda. The committee is looking into the possibilities of implementing cleaner burning fuels in NCDOT's fleet.

Mr. Hyder said that he has spoken to Steve Varnedoe, NCDOT, on the progress that the department has made with regards to learning about the use of alternative fuels in the fleet. The committee's goals are to meet two pieces of legislation. These are the Energy Efficiency Act and the Clean Air Act of the Governor's clean air plan. The six members of the committee are John Burns, Steve Varnedoe, David Hyder, John Stallings, Bruce Thompson, and Drew Harbinson.

Mr. Hyder stated that NCDOT is currently utilizing alternative fuels. Several divisions are almost 100% bio-diesel in their off-road equipment. The committee plans to bring to the September meeting a full status report for the board of where the department is with the use of alternative fuels, and our future plans for using them. Also included in the report will be some research needs and some ways to get the most out of where the department currently is.

Ms. Szlosberg then asked whether bio-fuels necessarily equate to lower emissions. Mr. Hyder responded by saying that some bio-fuels burn cleaner than others and that information would be included in the September update.

Next Ms. Szlosberg reminded the group that last year as part of NCDOT's clean air initiative Christie Barber of the North Carolina Asphalt Pavers Association was invited to speak on what they had been doing to improve the environment. Then she introduced Greg Dean who is Executive Director of the Southeast Chapter of the American Concrete Pavement Association (ACPA), who was invited to speak on their Cool Communities initiative.

Mr. Dean introduced APCA's ozone reduction strategy. Instead of focusing on reducing emissions, their initiative focuses on how atmospheric conditions can improve air quality. Mr. Dean explained that lower ambient air temperatures reduce the formation of smog and ozone. Mr. Dean introduced Jim Scapellato and Gordon Kenna, also of ACPA, and explained that "Cool Communities" is not an ACPA spearheaded effort, but rather a Department of Energy effort started back in 1993 and partially funded by EPA to address global warming.

Mr. Dean then described the makeup of ACPA in the southeast. It is a 60 member association made up of companies who pave with both asphalt and concrete. They look at cool communities in two ways: (1) as a way to help the environment and (2) to keep highway projects flowing. He reminded the group that in the case of a conformity lapse, as there was in Atlanta a few years back, money for highway projects is frozen. For this purpose they began to study the "smart growth" movement which supports building responsibly, not stopping growth altogether.

Mr. Dean then talked about two efforts within the concrete paving industry where they are concentrating on environmental stewardship. The first area is recycling concrete pavement and the second is utilizing a waste byproduct of the steel industry "slag" which not only increases the strength of concrete but also makes it whiter and increases its reflectivity.

Mr. Scapellato spoke on the Congress' primary areas of interest, which currently are security, energy, and the environment. Within the environmental field, the largest concern is air quality. Mr. Scapellato said that when focusing on air quality issues, most people concentrate on emissions. He described the effect of temperature and the impact that heat has on air quality. Mr. Scapellato said that the phenomenon of an urban area being much warmer than nearby rural areas is being called the "heat island effect." With these higher ambient air temperatures in urban areas comes an increase in the formation of smog and ground level ozone. This degraded air quality translates to health problems, which is the driving force behind the air quality issue. Mr. Scapellato went on to say that there are three areas in North Carolina on the American Lung Association's 2002 list of worst cities for air pollution.

Based on the old air quality standards, Atlanta has had \$700 million in highway funds withheld since 1998 due to conformity issues. The standards are more strict now than back in 1998. An economist at Georgia State University has calculated that for every \$1 invested in transportation infrastructure improvement yields \$6 of return in economic development.

It has been estimated that when the new standards come into effect, North Carolina will have 139 road projects in jeopardy accounting for \$1.7 billion. This would mean that 17 counties and parts of 23 others may be out of compliance. Mr. Scapellato went on to say that the same affect could be repeated all over the southeastern states.

Mr. Scapellato explained the urban heat island effect. Research has documented that temperatures are 4 to 10 degrees higher in urban areas than their rural counterparts. This equates to more power needed for air conditioning. In the US, \$40 billion is spent annually to cool buildings. To do so requires the burning of higher amounts of fossil fuels. This in turn contributes to pollution, which results in an increase of smog and higher levels of ozone. For every degree increase above 90 degrees results in a 3% ozone spike. This cycle then results in a higher incidence of heat and smog related health problems. In Los Angeles alone this translates to \$3 billion/year in health related costs.

Studies by NASA show that there are pockets of cool spots even within urban areas. These areas have one of the following traits: vegetation cover (especially trees); paved areas with lighter / higher reflectivity properties; or covered parking. Mr. Scapellato then scoped out several solutions for the urban heat island effect. First, we need to plant more trees. Trees absorb carbon dioxide, give off water vapor, and produce shade. We also need to be more sensitive toward intelligent choices in materials for pavement and roof surfaces. They need to be lighter in color and higher in reflective characteristics. We also need people friendly “sustainable” development practices, as well as things such as pervious pavements for temperature and water quality benefits.

Overall, Mr. Scapellato said that we need to make smart choices - hard choices - and that will cost money. People need to be given more incentives to do things that have environmental benefits.

Mr. Scapellato then explained how pervious concrete works and indicated that some locations in North Carolina are already utilizing this technology. Mr. Gordon Kenna was then introduced and passed around samples of pervious concrete.

Board member Frank Johnson then asked how much more expensive the pervious concrete costs per square yard. Mr. Kenna responded by saying it was about 20% more just looking at cost; however, pervious concrete has potential economic benefits that business owners can turn into profit by developing more land, and getting pervious land credit for areas paved with the pervious concrete.

Mr. Johnson then asked if EPA allowed the use of pervious concrete on highway projects in order to get mitigation credits. Mr. Kenna responded by explaining that pervious concrete was not engineered for highway use, but for light duty traffic and slow speed areas such as parking lots. He also explained that this concrete is lighter in color and due to its pervious nature, promotes more vigorous tree growth.

Mr. Kenna described how the “Cool Communities” program is working currently in Atlanta. Their partners are NASA, EPA, Georgia Regional Transportation Authority (GRETA), State Environmental Protection Division, Georgia Department of Transportation, Atlanta Regional Commission, Georgia Power, City of Atlanta, and Cool Communities. He then passed out an air quality report on the work GRETA has done in this area supporting cool communities.

Mr. Kenna explained that historically, ozone reduction efforts focused on volatile organic compound (VOC) reduction and eventually evolved toward focusing on nitric oxide (NOx) reduction. GRETA’s current research objective is looking at reducing urban ambient air temperatures as a means of reducing ground level ozone concentrations. It has been determined that a 5 to 10 degree temperature reduction in an urban area can lower ozone concentrations as much as 40%. GRETA is working on integrating land cover into the traditional air quality

models that focus on emissions control strategies. They are also trying to determine whether such a model will be sufficiently accurate and measurable for policy planning.

Therefore GRETA's research objectives are to determine what is the optimum combination of strategies (i.e. trees, pavement, or rooftops), how accurate is the modeling of the strategies, and whether the implementation of these strategies can be measured in a way to justify the use of public funds. Completing these objectives increases the probability of generating a defensible model that EPA will permit to be incorporated into the state implementation plan (SIP).

Mr. Kenna stated that the purpose behind the "Cool Community" strategy is to produce a built environment that more closely mimics the natural environment in terms of heat physics and water management. However, it is very complicated and time consuming. For instance, it takes several decades for a newly planted tree to grow to maturity and be most beneficial to its environment. Therefore, it is better to begin these new strategies now than to wait several years. One of the ways to do this is by giving developers incentives for implementing the strategies.

From a policy perspective, Mr. Kenna talked about what it would take to get these strategies implemented into the SIP once they have developed the model and were confident in it. In order to be included into the SIP, two criteria must be met: (1) it must be measurable, and (2) it must be enforceable.

Board member Frank Johnson stated that concrete is cooler than asphalt not necessarily because of its color but more due to its smoothness and resulting reflectivity. Therefore, smooth asphalt is almost as cool as smooth concrete. He went on to suggest that concrete companies should look into making "v" grooves on the concrete for the interstate rather than straight grooves so that more heat is reflected.

Board member Cam McRae then asked about the stress factor of porous concrete versus traditional concrete. Mr. Kenna replied that porous concrete was composed of 15 to 20% voids', therefore, the porous concrete would not support heavy loads or high speeds. Typically the porous concrete, which is fine for parking lots or light duty traffic, has a stress factor of around 2200 psi, and a concrete slab for a road would need to be significantly stronger.

Board member Frank Johnson then asked if tree roots were a problem with this type of concrete. Mr. Kenna said that tree roots would not come up through this type of concrete since moisture passes down through it so easily and the tree roots do not need to come up for water and air.

Board member Conrad Burrell asked how well the porous concrete holds up to colder climates. Mr. Kenna said he had not heard of any problems with the concrete due to water freezing; however, he cautioned that there may be some issues if you tried to plow porous concrete for snow removal because of its rough texture.

Ms. Szlosberg asked that if this concrete cannot be used for highways how can NCDOT encourage the use of this material since it is better for the environment. Mr. Kenna said that it can be used for park and ride lots, transit parking, rest stops, or demonstration projects to educate the public.

Ms. Szlosberg asked if they were aware of any federal programs to offset the cost increase of using porous concrete or utilizing other “Cool Community” strategies for such purposes as they suggested. Mr. Scapellato told of a project in South Carolina where the porous concrete was used and the cost is being covered by the FHWA through the transportation enhancement program and the scenic highway program. He said they were also exploring whether funds can be used from the congestion mitigation and air quality grant program for intersection improvements and traffic management systems that utilize the concrete.

Board member Marion Cowell asked why concrete companies were burning used tires (referring to a slide in the presentation). Mr. Dean said that they used old tires to supplement coal burning for the cement kiln because they give both a fuel NOx reduction and a thermal NOx reduction. By replacing a 20% btu substitution of tires for coal, NOx emissions were reduced by almost 50%.

Board member Nancy Dunn suggested that NCDOT staff look into ways to use “Cool Community” strategies and take the lead in ensuring that this information be disseminated to communities and the public statewide. She then made a motion for the staff to come back with recommendations for NCDOT to utilize these concepts and materials, and how to get the information to local governments for them to implement. The motion was passed.

Ms. Szlosberg then gave an update on the state minimum criteria permanent rulemaking process. The wrong rules were published after the BOT meeting in May, and the correct rules were published on July 15, 2002. Once the public comment period is complete, the committee will review the comments, make revisions as necessary, and can take the rules to the BOT for adoption. If no substantial revisions are made, the rules would become effective around April 2003.

The next meeting for the Environmental Planning and Policy Committee is scheduled for Wednesday, September 4, 2002 at 8:00 AM in the Board Room (Room 150) of the Transportation Building.

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